

**9th Meeting of E2BRN in Barcelona (Spain)**

**9th Meeting  
of the  
European Epidermal  
Barrier Research Network  
(E2BRN)**

**in Barcelona (Spain)**



**Scientific Organising Committee:**

**Yves Poumay (main organizer), Sanja Kezic, José Parra, Jens-Michael Jensen**

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# **9th Meeting of E2BRN in Barcelona (Spain)**

## **Invitation to the E2BRN meeting 2011 and Call for abstracts**

After very successful 7<sup>th</sup> and 8<sup>th</sup> European Epidermal Barrier Research Network (E2BRN) meetings organised as satellite meetings of the Annual Meeting of the European Society of Dermatological Research (ESDR) in Budapest in September 2009 and in Helsinki in September 2010, it was decided to organise in 2011 the 9<sup>th</sup> E2BRN meeting again as a satellite of the 41<sup>st</sup> annual meeting of the ESDR in Barcelona (Spain).

**The E2BRN satellite meeting will take place on September 7 and 8, 2011.**

Colleagues who register for the ESDR meeting (ESDR members: EUR300, non ESDR members: EUR500) are automatically registered for the E2BRN meeting at no additional costs. You can also register for the E2BRN meeting only at the reduced fee of EUR100

**The program of the E2BRN meeting is provided below.**

There are a number of invited lectures and there are also a number of slots for short oral communications (15 minutes including discussion) and a possibility to present posters. The oral communications will be selected based on the submitted abstracts. The submitted abstracts will not be published to allow you to present your latest results.

The abstract should have a length of 250 words or less and should include a description of the purpose of the study, a description of the experimental design, a summary of results, and a conclusion. Please do not include graphics, tables or references.

**The abstracts should be submitted to Béatrice Martinet:**

email: [Beatrice.martinet@fundp.ac.be](mailto:Beatrice.martinet@fundp.ac.be)

**The deadline of abstract submission is 7 July 2011.**

We hope to welcome you at this satellite symposium. We are very much looking forward to this event!

The organisers

## 9th Meeting of E2BRN in Barcelona (Spain)

### Program

**Wednesday, September 7**

**13:30 - 16:30**

**Session 1**

**Chair: Michel Simon (Toulouse)**

**13:30 - 14:00**

**Olga Lopez (Barcelona):**

**Bicellar nanosystems as epidermal barrier function modulators**

**14:00 - 14:15**

**Ryan O'Shaughnessy (London)**

The protein phosphatase 2A regulatory subunit Ppp2r2a mediates trafficking of tight junction components during epidermal barrier formation

**14:15 - 14:30**

**Philippe De Groote (Ghent)**

RIP4 is required for epidermal barrier formation and keratinocyte differentiation

**14:30 - 15:00**

**Sophie Thenet (Paris):**

Jumping from one barrier to another: the intestinal barrier and the unexpected role of the cellular prion protein

**15:00 - 15:15**

**Hélène Duplan (Toulouse)**

Study of the cutaneous absorption and metabolism of xenobiotics using ex vivo skin models

## 9th Meeting of E2BRN in Barcelona (Spain)

15:15 - 15:30	Minetta Wunderskirchner (Hamburg) Systemic cholesterol levels mediate age-dependent changes in cholesterol homeostasis in female human epidermis leading to altered corneocyte desquamation
15:30 - 15:45	Paloma Florez (Barcelona): Penetration of Nystatin nanoemulsions through epidermal and mucosa barriers to induce an antimicrobial effect
15:45 - 16:05	Nina Kirschner (Hamburg): CD44 regulates tight-junction assembly and barrier function
16:05 - 16:30	Coffee break and poster viewing
<b>16:30 - 18:00</b>	<b>Workshop on the epidermal barrier in atopic eczema (Joint session with the COST action on Skin Barrier and Atopic Diseases (SKINBAD))</b> <b>Chair: Sanja Kezic (Amsterdam)</b>
16:30 - 16:50	Stephan Weidinger (Kiel): Recent genetic findings on atopic eczema
16:50 - 17:10	Verena Martinz (Innsbruck): Effects of epidermal barrier disruption on vitamin D3-induced atopic dermatitis-like inflammation in mice

## 9th Meeting of E2BRN in Barcelona (Spain)

**Thursday, September 8**

**09:00 - 10:30**

### **Session 2**

**Chair: Johanna Brandner (Hamburg)**

09:00 - 09:30

Nathalie Jonca (Toulouse):  
Corneodesmosin: structure, function,  
and involvement in pathophysiology

09:30 - 09:45

Frédéric Minner (Namur)  
Enhanced expression of involucrin and  
suppressed expression of keratin-10 in  
keratinocytes indicate response to  
challenging conditions

09:45 - 10:00

Ana M. Gimenez-Arnau (Barcelona):  
Epidermal barrier function and hand  
eczema, what we know

10:00 - 10:30

Truus Roelandt (Brussels):  
From secretion to desquamation: the  
pathway between stratum granulosum  
and stratum corneum keratinocytes

**10:30 - 11:00**

**General assembly of our network**

E2BRN meeting 2011 is supported by



# 9th Meeting of the European Epidermal Barrier Research Network (E2BRN)

**Date:** Wednesday 7 September 2011/Thursday 8 September 2011  
**Room:** 133/134

The E2BRN satellite sessions are open to all registered ESDR delegates. E2BRN delegates only attending this session should pay an on-site registration fee of EUR 100.

## PROGRAM

**Wednesday 7 September 2011. Session 1**  
**Chair: Michel Simon**

**13.30-14.00** **Bicellar nanosystems as epidermal barrier function modulators**  
Olga Lopez (Barcelona)

**14.00-14.15** **The protein phosphatase 2A regulatory subunit Ppp2r2a mediates trafficking of tight junction components during epidermal barrier formation**  
Ryan O'Shaughnessy (London)

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Philippe De Groote (Ghent)

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**15.15-15.30** **Systemic cholesterol levels mediate age-dependent changes in cholesterol homeostasis in female human epidermis leading to altered corneocyte desquamation**  
Minetta Wunderskirchner (Hamburg)

**15.30-15.45** **Penetration of Nystatin nanoemulsions through epidermal and mucosa barriers to induce an antimicrobial effect**  
Paloma Florez (Barcelona)

**15.45-16.05** **CD44 regulates tight-junction assembly and barrier function**  
Nina Kirschner (Hamburg)

**16.05-16.30** **Coffee Break and Poster Viewing**

**Workshop on the epidermal barrier in atopic eczema (Joint session with the COST action on SkinBarrier and Atopic Diseases (SKINBAD))**  
**Chair: Sanja Kezic**

**16.30-16.50** **Recent genetic findings on atopic eczema**  
Stephan Weidinger (Kiel)

**16.50-17.10** **Effects of epidermal barrier disruption on vitamin D3-induced atopic dermatitis-like inflammation in mice**  
Verena Martinz (Innsbruck)

**17.10-17.30** **Enhanced skin penetration – inherent or induced**  
Jesper Bo Nielsen (Odense)

**17.30-17.50** **Fractalkine and its receptor in atopic dermatitis**  
David Dombrowicz (Lille)

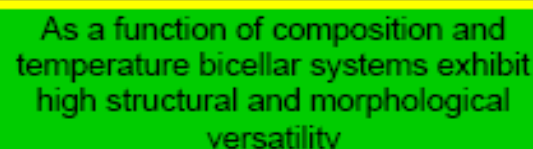
**17.50-18.10** **Developments on atopic eczema research: analysis of skin ceramides**  
Joke Bouwstra (Leiden)



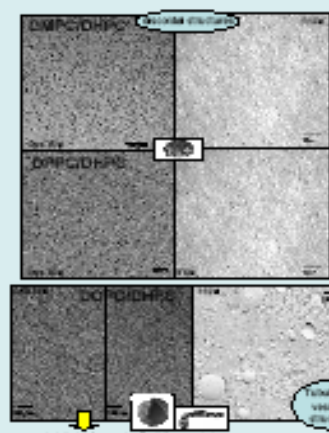
**Bicellar systems** are a fascinating category of versatile and robust lipid assemblies consisting in bilayered disk-shaped nanoaggregates formed in water by long and short alkyl chain phospholipids. Bicelles bridge the gap between micelles and lipid vesicles combining some of the more attractive properties of both systems: bicelles exhibit dimensions small enough to pass through the SC lipid lamellae and their composition consists exclusively in lipids.

This work provides evidence on the **structural versatility of bicellar systems** and on their **potential for skin purposes**.

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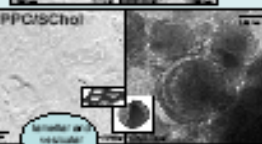
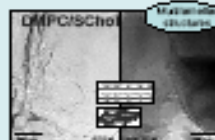
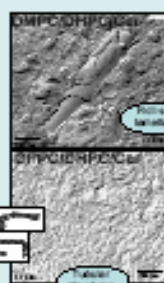


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Barbara Morris, *de Wolford, Upper Mersey, Upper Cheshire* (tel. 017 55000) 176  
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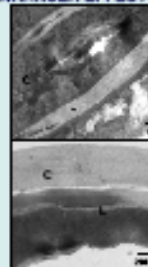


- Below the main transition temperature ( $T_m$ ) of the long alkyl chain phospholipids, bioellar systems present discoidal structures, above this temperature an increase in the size and formation of vesicles take place.
- Inclusion of lipids and/or other amphiphilic molecules forming bilayers increases diameter of the disks and induces formation of tubular, lamellar and vesicular structures.
- Bioellar systems with 5% Cer present small disk-like shaped bioelles. Higher amounts of Cer promote a destabilization of the system, probably due to the effect of lateral separation, and other lipid structures are formed.
- Inclusion of drugs and other molecules promotes structural changes as a function of their hydrophilic/lipophilic character.

Different bicellar systems induce different effects on the skin giving high applicability to these nanostructures

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### ENHANCER EFFECT



**SC + DMPC/DHPC**  
 • Do not induce microstructural changes.  
 • Increase TEWL in vivo.  
 • Increase fluidity of SC lipids.

**SC + DMPC/DHPC/Cer**  
 • Do not induce microstructural changes.  
 • Increase dramatically TEWL in vivo.

REINFORCEMENT OF SC  
LIPIDS

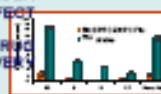
- **8C + DPPC/DHPC**
  - Formation of new lamellar/vesicular structures.
  - Do not modify skin biophysical parameters in vivo.
- **8C + DPPC/DHPC/Cer**
  - Do not induce microstructural changes.
  - Slightly decrease TEWL in vivo.

REINFORCEMENT OF SC  
LIBRIS A TWO-SIDE

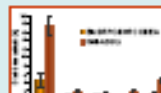
- 8C + DOPC/DHPC
- Formation of new lamellar/vesicular structures.
- Adherence of vesicular structures on the skin surface
- Decrease of the TEWL.

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RETARDER  
EFFECT  
DRUG  
DELIVERY



**DPFC/DHPC as vehicle for DDEA and Flu**  
percutaneous absorption



- inclusion of Flu or DDEA in DPPC/DHPC systems induces a retardant effect in the percutaneous absorption of the drug.

→ **negative correlation** = inverse relationship between two variables

**Environ Monit Assess** (2015) 189:1029–1040  
DOI 10.1007/s10661-015-4600-0

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continued on p. 22

- Biophysical parameters (in vivo).
- SAXS
- ATR-FTIR

conventional and Synchrotron

DMPC/8Chol and DPPC/8chol

- The presence of 8Chol in DMPC and DPPC bilayers induces a decrease in the fluidity of SC lipids and in the permeability of the skin barrier.

Depending on their composition, bicellar systems interact differently with the microstructure of the SC. These nanostructures emerge as **smart nano-systems** with the possibility to **alter the SC lipid microstructure** and to **modulate skin barrier function** and possess promising applications for skin.